What is claimed is:

1. An oil pump rotor assembly comprising:

an inner rotor having "n" external teeth ("n" is a natural number); and

an outer rotor having (n+1) internal teeth which are engageable with the external teeth,

wherein the oil pump rotor assembly is used in an oil pump which further includes a casing having a suction port for drawing fluid and a discharge port for discharging fluid, and which conveys fluid by drawing and discharging fluid by volume change of cells formed between tooth surfaces of the inner rotor and the outer rotor during relative rotation between the inner rotor and the outer rotor engaging each other,

wherein each of the tooth profiles of the outer rotor is formed such that the tooth space profile thereof is formed using an epicycloid curve which is generated by rolling a circumscribed-rolling circle Ao along a base circle Do without slip, and the tooth tip profile thereof is formed using a hypocycloid curve which is generated by rolling an inscribed-rolling circle Bo along the base circle Do without slip,

wherein the tooth space profile of the inner rotor is formed based on a hypocycloid curve which is formed by rolling an inscribed-rolling circle Bi along a base circle Di without slip, and

wherein the tooth tip profile of the inner rotor is formed such that an epicycloid curve, which is generated by rolling a circumscribed-rolling circle Ai along the base circle Di without slip, is equally divided into two at a midpoint thereof to obtain two outer tooth curve segments, and the two outer tooth curve segments are separated by a predetermined distance and are smoothly connected to each other using a curve or a straight line.

2. An oil pump rotor assembly according to claim 1, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are moved along the circumference of the base circle Di.

3. An oil pump rotor assembly according to claim 1, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof.

4. An oil pump rotor assembly according to claim 1, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are first moved along the circumference of the base circle Di, and then moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof.

5. An oil pump rotor assembly according to claim 1, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are first moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof, and then moved along the circumference of the base circle Di.

6. An oil pump rotor assembly according to claim 1, wherein when the predetermined distance between the two outer tooth curve segments is designated by "α", and a tip clearance is designated by "t", "α" is set so as to satisfy the following inequalities: $t/4 \leq \alpha \leq 3t/4$.

7. An oil pump rotor assembly according to claim 6, wherein the predetermined

distance "α" is set so as to satisfy the following inequalities:

$2t/5 \leq \alpha \leq 3t/5$.

8. An oil pump rotor assembly comprising:

an inner rotor having "n" external teeth ("n" is a natural number); and

an outer rotor having (n+1) internal teeth which are engageable with the external teeth,

wherein the oil pump rotor assembly is used in an oil pump which further includes a casing having a suction port for drawing fluid and a discharge port for discharging fluid, and which conveys fluid by drawing and discharging fluid by volume change of cells formed between tooth surfaces of the inner rotor and the outer rotor during relative rotation between the inner rotor and the outer rotor engaging each other,

wherein each of the tooth profiles of the inner rotor is formed such that the tooth tip profile thereof is formed using an epicycloid curve which is generated by rolling a circumscribed-rolling circle Ai along a base circle Di without slip, and the tooth space profile thereof is formed using a hypocycloid curve which is generated by rolling an inscribed-rolling circle Bi along the base circle Di without slip,

wherein the tooth space profile of the outer rotor is formed based on an epicycloid curve which is formed by rolling a circumscribed-rolling circle Ao along a base circle Do without slip, and

wherein the tooth tip profile of the outer rotor is formed such that a hypocycloid curve, which is generated by rolling an inscribed-rolling circle Bo along the base circle Do without slip, is equally divided into two at a midpoint thereof to obtain two inner tooth curve segments, and the two inner tooth curve segments are separated by a predetermined distance and are smoothly connected to each other using a curve or a straight line.

9. An oil pump rotor assembly according to claim 8, wherein the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are moved along the circumference of the base circle Do.

10. An oil pump rotor assembly according to claim 8, wherein the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are moved in the direction of a tangent of the hypocycloid curve drawn at the midpoint thereof.

11. An oil pump rotor assembly according to claim 8, wherein the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are first moved along the circumference of the base circle Do, and then moved in the direction of a tangent of the hypocycloid curve drawn at the midpoint thereof.

12. An oil pump rotor assembly according to claim 8, wherein the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are first moved in the direction of a tangent of the hypocycloid curve drawn at the midpoint thereof, and then moved along the circumference of the base circle Do.

13. An oil pump rotor assembly according to claim 8, wherein when the predetermined distance between the two inner tooth curve segments is designated by "β", and a tip clearance is designated by "t", "β" is set so as to satisfy the following inequalities: $t/4 \leq \beta \leq 3t/4$.

14. An oil pump rotor assembly according to claim 13, wherein the predetermined distance "β" is set so as to satisfy the following inequalities:

$2t/5 \leq \beta \leq 3t/5$.

15. An oil pump rotor assembly comprising:

an inner rotor having "n" external teeth ("n" is a natural number); and

an outer rotor having (n+1) internal teeth which are engageable with the external teeth,

wherein the oil pump rotor assembly is used in an oil pump which further includes a casing having a suction port for drawing fluid and a discharge port for discharging fluid, and which conveys fluid by drawing and discharging fluid by volume change of cells formed between tooth profiles of the inner rotor and the outer rotor during relative rotation between the inner rotor and the outer rotor engaging each other,

wherein the tooth tip profile of the inner rotor is formed such that an epicycloid curve, which is generated by rolling a circumscribed-rolling circle Ai along a base circle Di without slip, is equally divided into two at a midpoint thereof to obtain two outer tooth curve segments, and the two outer tooth curve segments are separated by a predetermined distance and are smoothly connected to each other using a curve or a straight line,

wherein the tooth space profile of the inner rotor is formed based on a hypocycloid curve which is formed by rolling an inscribed-rolling circle Bi along the base circle Di without slip,

wherein the tooth space profile of the outer rotor is formed based on an epicycloid curve which is formed by rolling a circumscribed-rolling circle Ao along a base circle Do without slip, and

wherein the tooth tip profile of the outer rotor is formed such that a hypocycloid

curve, which is generated by rolling an inscribed-rolling circle Bo along the base circle Do without slip, is equally divided into two at a midpoint thereof to obtain two inner tooth curve segments, and the inner tooth curve segments are separated by a predetermined distance and are smoothly connected to each other using a curve or a straight line.

16. An oil pump rotor assembly according to claim 15, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are moved along the circumference of the base circle Di, and the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are moved along the circumference of the base circle Do.

17. An oil pump rotor assembly according to claim 15, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof, the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are moved in the direction of a tangent of the hypocycloid curve drawn at the midpoint thereof.

18. An oil pump rotor assembly according to claim 15, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are first moved along the circumference of the base circle Di, and then moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof, and the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are first moved along the circumference of the base circle Do, and then moved in the direction of a tangent of the hypocycloid curve drawn at

the midpoint thereof.

19. An oil pump rotor assembly according to claim 15, wherein the separation of the two outer tooth curve segments is performed in such a manner that the two outer tooth curve segments are first moved in the direction of a tangent of the epicycloid curve drawn at the midpoint thereof, and then moved along the circumference of the base circle Di, and the separation of the two inner tooth curve segments is performed in such a manner that the two inner tooth curve segments are first moved in the direction of a tangent of the hypocycloid curve drawn at the midpoint thereof, and then moved along the circumference of the base circle Do.

20. An oil pump rotor assembly according to claim 15, wherein when the predetermined distance between the two outer tooth curve segments is designated by "α", the predetermined distance between the two inner tooth curve segments is designated by "β", and a tip clearance is designated by "t", "α" and "β" are set so as to satisfy the following inequalities:

$t/4 \leq \alpha \leq 3t/4$; and

$t/4 \leq \beta \leq 3t/4$.

21. An oil pump rotor assembly according to claim 20, wherein the predetermined distance "α" and the predetermined distance "β" are set so as to satisfy the following inequalities:

$2t/5 \leq \alpha \leq 3t/5$; and

$2t/5 \leq \beta \leq 3t/5$.

22. An oil pump rotor assembly according to one of claims 1, 8, and 15, wherein the inner rotor and the outer rotor are formed such that the following equations are satisfied:

$øAi+t/2=øAo$;

$øBi-t/2=øBo$;

$øAi+øBi=øAo+øBo=2e$;

$øDi=n\cdot(øAi+øBi)$;

$øDo=(n+1)\cdot(øAo+øBo)$; and

$(n+1)\cdot øDi=n\cdot øDo$,

where, øDi is the diameter of the base circle Di of the inner rotor, øAi is the diameter of the circumscribed-rolling circle Ai, øBi is the diameter of the inscribed-rolling circle Bi, øDo is the diameter of the base circle Do of the outer rotor, øAo is the diameter of the circumscribed-rolling circle Ao, øBo is the diameter of the inscribed-rolling circle Bo, "e" is an eccentric distance between the inner rotor and the outer rotor, and "t" is a tip clearance.

23. An oil pump rotor assembly according to one of claims 1, 8, and 15, wherein the inner rotor and the outer rotor are formed such that the following equations are satisfied:

$øAi+t/(n+2)=øAo$;

$øBi=øBo$;

$øAi+øBi=2e$;

$øDi=n\cdot(øAi+øBi)$; and

$øDo=øDi\cdot(n+1)/n+t\cdot(n+1)/(n+2)$,

where, øDi is the diameter of the base circle Di of the inner rotor, øAi is the diameter of the circumscribed-rolling circle Ai, øBi is the diameter of the inscribed-rolling circle Bi, øDo is the diameter of the base circle Do of the outer rotor, øAo is the diameter of the

circumscribed-rolling circle Ao, øBo is the diameter of the inscribed-rolling circle Bo, "e" is an eccentric distance between the inner rotor and the outer rotor, and "t" is a tip clearance.

24. An oil pump rotor assembly according to one of claims 1, 8, and 15, wherein the inner rotor and the outer rotor are formed such that the following equations are satisfied:

$\varnothing Ai = \varnothing Ao$;

$\varnothing Bi + t/(n+2) = \varnothing Bo$;

$\varnothing Ai + \varnothing Bi = 2e$;

$\varnothing Di = n \cdot (\varnothing Ai + \varnothing Bi)$; and

$\varnothing Do = \varnothing Di \cdot (n+1)/n + t \cdot (n+1)/(n+2)$,

where, øDi is the diameter of the base circle Di of the inner rotor, øAi is the diameter of the circumscribed-rolling circle Ai, øBi is the diameter of the inscribed-rolling circle Bi, øDo is the diameter of the base circle Do of the outer rotor, øAo is the diameter of the circumscribed-rolling circle Ao, øBo is the diameter of the inscribed-rolling circle Bo, "e" is an eccentric distance between the inner rotor and the outer rotor, and "t" is a tip clearance.